

REMARKS

A Request for a Two (2) Month Extension of Time pursuant to 37 CFR 1.136 (a) and (b) is attached hereto.

The above-captioned patent application has been carefully reviewed in light of the final Office Action to which this Amendment is responsive. Claims 1, 5, 7-40, 45, 46, 48, 50, 54-79, 83 and 85 have been canceled in favor of new Claims 87-158 in an effort to further clarify and distinctly describe that which is regarded as the present invention. To that end, it is believed no new matter has been added.

Claims 1-86 are pending in the above-captioned application, of which Claims 4, 41-43, 47, 49, 80-82, 84 and 86 were previously withdrawn due to a Restriction Requirement. Each of the above elected claims have been rejected in light of certain prior art. Applicants herein respectfully request reconsideration based on the new Claims 87-158 as well as the following discussion.

Applicants gratefully acknowledge the telephonic interview granted by Examiner Lee A. Fineman to Applicants representative, Peter J. Bilinski, on February 16, 2005. The subject matter of that interview is included within the text of this response.

Regarding the specific prior art rejections, original Claims 11, 15-30, 39-40, 45-46, 48, 58-70, 75-79, and 85 have been rejected under 35 USC §103(a) as being unpatentable based on the combination of Takahashi (U.S. Patent No. 5,522,789) and Sakiyama et al (U.S. Patent No. 6,063,023), Claims 1, 5, 8-10, 12, 13, 50, 55-59 and 83 have been rejected under 35 USC §103(a) as being unpatentable over the combination of Takahashi and Sakiyama et al. and further in view of Greenberg (U.S. Patent No. 5,592,328), Claims 7 and 54 have been rejected based on the combination of Takahashi, Greenberg and Sakiyama et al., and further in view of Miyano et al (U.S. Patent No. 5,840,014), Claims 14, 31-34, 36-38, and 71-74 have been rejected based on the combination of Takahashi and Sakiyama et al. and further in view of Hori et al (U.S. Patent No. 6,191,809), and Claim 35 has been rejected based on the combination of Takahashi in view of Sakiyama et al., and Hori et al., and further in view of Ko (U.S. Patent No. 5,710,428).

Applicants herein wish to clearly distinguish the present invention from the cited prior art references. To that end, Applicants have provided a stereoscopic imaging system that can be used for viewing an object, such as with a probe, the system including an image splitter, such as a refractive prism, having a pair of flat

optical surfaces that are angularly arranged relative to a single optical axis in order to acquire first and second images of a distant object. Moreover, the optical entrance surfaces further cause the acquired first and second images to inwardly converge toward the optical axis of the system so as to be directed onto a focusing lens that further focuses each of the acquired images along the single optical axis onto at least one electronic imager. The system can be used, for example, in an elongated probe for a stereo digital endoscope in order to produce on a monitor, for viewing, left and right images of a selected target. Using this system design, a single lens train carries both the first and second images with substantially no "image mixing" between the first and second images as produced onto the electronic imager(s).

Turning briefly to the major references cited by the Examiner, Takahashi describes a stereoscopic imaging system for an endoscope. As shown in Fig. 13(a) and 13(b), this system includes an objective lens system that includes a horizontally disposed shielding plate used to prevent image mixing relative to an incoming image of a distant object. A relay lens assembly is disposed in relation to the objective system which relays the images to a focusing lens. This reference fails to describe or suggest an image splitter that includes a pair of refractive surfaces that are used to form and converge first and second adjacent images of a distant object.

Greenberg relates to an illumination system for a microscope. The system includes a light source disposed in relation to a pair of prism members that are adjoined side to side. The prisms include a flat entrance surface which is arranged perpendicular to the entering light, each of the adjoining prisms being wedges that produce a pair of independent divergent light beams. Each of the divergent light beams are then transmitted to a focusing lens and subsequently to an eyepiece of the microscope. The divergent beams produce uniform illumination which is transferred to the eyepiece. The present invention is directed to an imaging system and not an illumination system. As such, it is necessary that in order for the first and second images to effectively overlap 100 percent at the object distance, that the image splitter is used – not to diverge the images, as performed according to the design of Greenberg, but rather to converge the images onto the focusing lens, see Fig. 1 of the present application.

Applicants have now added new Claims 87-158 in favor of the original pending claims. New Claims 87 and 130 have now been drafted in order to

specifically recite each of the above essential features relating to a stereoscopic imaging system (Claim 87) and a method of stereoscopically viewing an object (Claim 130) in which an image splitter is provided on a single optical axis relative to a distant object. The image splitter includes two flat refractive optical surfaces that form first and second adjacent images of the distant object. Moreover, the surfaces further converge the formed images inwardly relative to the axis of at least one focusing lens and then permitting each of the images to be directed (detected) by at least one electronic imager disposed along the single optical axis in side by side fashion. Support is found at Fig. 1 and 2, for example, of the present application. To that end, it is believed that no new matter has been added.

Turning now to the Section 103 rejections, and to maintain a “*prima facie*” obviousness rejection under the Statute, each reference (either singly or in combination), must teach or suggest the essential features of the claims. Those features not taught or suggested must be notoriously well known in the prior art to one of ordinary skill. Furthermore, there must also be a motivation which is found in the prior art as a whole in order to effectively combine the references. This motivation cannot result from a piecemeal combination of features in an effort to duplicate the invention as a result of hindsight (e.g., advance knowledge), but rather must result from an overall teaching of the references, taken in their entirety, at the time of the invention. To that end, a combination of references cannot teach against, destroy or render useless what is already taught by a cited reference.

The issue of motivation can at times be difficult to assess and often requires the use of objective criteria to infer its existence or non-existence. To that end, proof of a long felt need to an existing or prevalent problem for a sufficient duration after the existence of certain prior art can be very probative.

It is believed that new Claims 87 and 130 are patentably distinct from each of the cited references, whether the references be cited singly or in combination. None of the references contain or suggest any teaching of a stereoscopic imaging system that includes an image splitter disposed along an optical axis, the image splitter having flat refractive optical surfaces that permit forming and convergence of adjacent first and second images of a distant object. As previously noted, Greenberg teaches an illumination and not an imaging system that includes a light splitting prism. The prism of Greenberg, however, is intended to produce uniform illumination by creating divergent independent light beams due to the arrangement

of wedge shaped exit surfaces of the prism. This result is precisely the opposite desired by the present invention in which it is desired to create an overlapping of the first and second images at 100 percent at the object distance. This latter effect can only occur through convergence of the adjacent images of the object. No such teaching is found, explicitly or implicitly, in Greenberg. This lack of teaching is reasonable in that the results desired are almost opposite. As such, there is clearly an inventive gap not found in Greenberg or Takahashi that would be produced in their combination.

The citation of Sakiyama et al is not really on point with regard to new Claims 87 and 130. This reference deals with certain arithmetic and software related features performed on an endoscope, but this patent does not provide any teachings regarding stereography and certainly not those features present in new Claims 87 and 130 that are not found in each of Takahashi and/or Greenberg.

The citations of Ko, Hori et al, and Miyano et al are similarly flawed. None of these secondary references in any way contain or suggest the essential features that are missing from Takahashi, Sakiyama and Greenberg, either alone or in combination. As a result, Applicants believe that each of the prior art rejections should be withdrawn. Reconsideration is respectfully requested.

In summary, it is believed the above-captioned patent application is now in allowable condition and such allowance is earnestly solicited.

If the Examiner wishes to expedite disposition of the above-captioned patent application, he is invited to contact Applicants representative at the telephone number below.

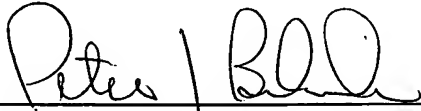
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The Director is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-0289.

Respectfully submitted,

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